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 Paper Title: IUID Enabled Workscope Optimization and Implementation on Legacy Gas Turbine Engine Components
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 Abstract: The USAF T56 engine Program Office implemented StandardAero's Workscope Cost Optimizing Tool (WCOT)™ in 2006, used for Reliability-Centered Maintenance (RCM). This engine reliability tool recommends optimal repair workscopes based on the underlying reliability and cost of repair options. The success of the program in improving T56 engine reliability has been directly tied to the quantity and quality of data collected at the depot and in the field through the use of the Maintenance In-Depth Collection System (MIDCS) database and the Comprehensive Engine Management System (CEMS) within the USAF's Data Repository Center (DRC). Data is manually entered into these databases, which leads to occasional errors in time tracking and part information, as well as many labor-hours expended at all levels of maintenance when errors are reconciled. Reliability software tools are heavily reliant on these data collection systems for engine workscoping and predictions.

Reliability engineering provides the most accurate results when using correct data. While most data gathered from these data collection system is valid, many errors still exist and Item Unique Identification (IUID) can enhance the quality by reducing data entry error while simultaneously minimizing labor and easing logistical tracking.   A recent demonstration at a T56 Maintenance Depot in San Antonio proved that IUID reduced the labor associated with USAF database entry by 86%, which accounted for about 60% of the required data collection effort. This technology is expected to also nearly eliminate inadvertent and manually-entered errors, which is observed in approximately 25% of engine queries. IUID also eased the addition of currently non-tracked engine items into a database, and "new time-tracked items" are expected to only enhance the accuracy of RCM results. The ease of adding non-tracked items was complemented by utilizing a variety of part marking options that were non-detrimental to material surfaces.

IUID technology has proven beneficial in numerous aerospace and large-scale production environments. The benefits of IUID, particularly with legacy engine programs, have the potential of being realized at all maintenance levels, including personnel usage and labor, as well as reliability engineering and logistics. Maintenance, logistics, and records personnel are expected to benefit from IUID by utilizing 2D barcodes uniquely created for every serialized item as part of the data entry process; thereby, replacing manual entry into USAF databases system and documentation. An added benefit would be to generate engine record documents using the IUID barcodes. IUID has proven to enable the transformation of a legacy approach of engine information processing and parts tracking into a modern process, leveraged by error and labor reduction, and lessening the burden on the war fighter.